



**Vol. 53**

**January 2003**

**No. 1**

## **Happy New Year 2003!**

### **Busy Year for Hams in 2002**

Colorado Springs hams were busy this past year, from the fires to the 'fest, and JOTA and everything else going on. One thing noticeably absent this year was Field Day. This was the first year that anyone can recall in which Field Day was cancelled!



Hopefully things will return to normal, or at least closer to normal, and Field Day will take place as scheduled this year. Work is already under way to secure a Field Day site closer to home this year. Most likely the joint PPRAA/MARC Field Day of previous years won't take place this year. As we've tried to do in past years, we like to have the Field Day site closer to Colorado Springs once in a while. This year it looks like we'll have ours down here, and MARC will have its Field Day in the mountains.

### **Memberships Up for Renewal**

Don't forget -- All memberships now expire on December 31. If you haven't renewed yet, you're getting this copy as part of a 1 month grace period. Now's the time to renew, though. Clip or copy the membership form on page 11 and send it in with your dues. Thanks!

### **Home Brew Night**

Okay, for one day this month, you have to put away all the new toys and dig out all the old toys, the ones you built a while back, the project you worked on last year, whatever, and bring it on down to Home Brew Night to show and tell! Home Brew Night is always one of the favorite club programs. Some folks might only make one meeting a year, and it's usually the Home Brew Night. If you've recently built a project that you want to show off, tell us about, explain how it works, then bring it in. If you have a project that you did a long time ago but haven't yet proudly displayed it, then bring it in just the same. We'd all be interested in hearing and seeing what you've got.

**Program: Home Brew Night!**

**Meetings**

Our monthly meetings are normally held on the 2nd Wednesday of each month at 7 pm at the Leon Young Service Center, 1521 Hancock Parkway, just north of the US 24 (Martin Luther King) Bypass. Our Annual meeting is in October. Check the web site for any changes.

**Regular License Exam Sessions**

Our ARRL VEC test sessions are on the 2nd Saturday of even numbered months at 0900 at the DeVry Institute annex, 3245 International Cr, just east of Memorial Park, but west of Printers Parkway. Contact Erik KGØXE for details.

Examinees need to bring (1) \$12, preferably a check or money order payable to ARRL/VE; (2) picture ID; (3) the signed original and a copy of your current amateur radio license and CSEs you have (we keep the copies); and (4) a pen, pencil, and calculator if needed. Memory calculators will be checked.

**PPRAA Web Page** See it at <http://www.qsl.net/ppraa/>.

Thanks to Lee Inman KØQED for maintaining these pages.

**Get on the PPRAA E-mail**

**Reflector** Stay on top of new or short-fused developments.

Subscribe at

<http://mailman.qth.net/mailman/listinfo/ppraanet>.

Thanks to John Wishart KCØJFH for maintaining this list.

**PPRAA Simplex Net**

All amateurs are invited to join us on Thursday evenings at 1900 on 146.58 MHz simplex for our club net. Get the latest club and regional happenings!

**Officers and Directors**

President	Ben Cruise	NØLNW		n0lnw@arrl.net
Vice President	Tom McDaniel	NØNTX	570-1465	n0ntx@amsat.org
Secretary	Joanie VerDuft	KCØGMI		verduftj@earthlink.net
*Treasurer	Bob Wogaman	KBØB	531-0511	kb0b@worldnet.att.net
*Board Member	Rick Brown	KØSU	531-9423	k0su@arrl.net
*Board Member	Kate Muniz	KCØEGJ	683-7702	kc0egj@aol.com
*Board Member	Aaron Pelouze	KD6FLM		
Board Member	Jerry VerDuft	ADØA		verduftj@earthlink.net
Ø-Beat Editor	Rob Roller	N7LV	282-0204	n7lv@ppfma.org

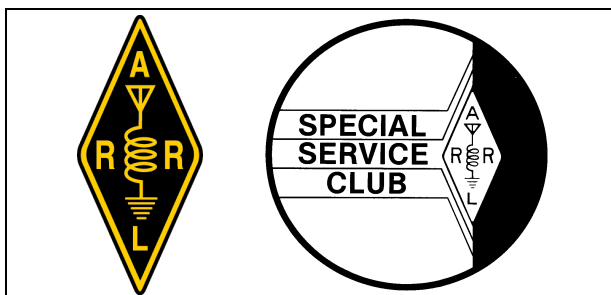
\* Indicates this Director is in the 2nd year of a two-year term

**Committee Chairs & Other Contacts**

Activity	VACANT			
Auditing	Kate Muniz	KCØEGJ	683-7702	kc0egj@aol.com
Asset	Mike Stansberry	KØTER	636-1290	
E-Mail Reflector	John Wishart	KCØJFH	481-2439	john.wishart@hp.com
Historian	Ron Deutsch	NKØP		nk0p@arrl.net
Interference	Bill Petty	NØNJX	532-1439	
Membership	Les Borst	KCØNC	634-3995	
Programs	Rick Brown	KØSU	531-9423	k0su@arrl.net
Publicity	Roger Foust	KE6ZOT	538-8866	ke6zot@arrl.net
Public Service	Mike Stansberry	KØTER	636-1290	
Hamfest	Kate Muniz	KCØEGJ	683-7702	kc0egj@aol.com
Technical Education	Linda Hedges	KBØRKW	683-7828	kb0rkw@juno.com
VE Testing	Erik Mugele	KGØXE		ve@teuton.org
Video Librarian	VACANT			
Webmaster	Lee Inman	KØQED	495-9577	k0qed@arrl.net
AMSAT Coordinator	Tom McDaniel	NØNTX	570-1465	n0ntx@amsat.org
ARRL Awards Mgr	Rick Brown	KØSU	531-9423	k0su@arrl.net
ARES EC	Wes Wilson	KØHBZ		
ARES Liaison	Mike Stansberry	KØTER	636-1290	
ARRL Section Mgr	Jeff Ryan	KØRM	260-6826	k0rm@arrl.net
CCARC Liaison	Moe Pierce	WBØRTF		
HamCon Chairman	Jerry VerDuft	ADØA		verduftj@earthlink.net
RACES Officer	Tony Dal Lago	KC4VMB	575-8400	kc4vmb@qsl.net

**Upcoming Club Programs**

Jan.....	Homebrew Night
Feb .....	Al Penney Returns: "Battle of the Beams": Electronic Warfare in WW II



**Articles for the Ø-Beat** Deadline for articles or ads for the Feb issue is Jan 27. Submit articles by e-mail, US Mail, telephone or in person to the editor. Editor reserves right to edit for readability, grammar, spelling, punctuation and length.

**Nonprofit Organization** The PPRAA is a federal 501(c)(3) nonprofit organization and welcomes all contributions. Your contributions/donations may be tax-deductible.

**Ø-Beat Available Electronically** in PDF form via e-mail and on the web. Contact the editor for details.

The Ø-Beat is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc, P.O. Box 16521, Colorado Springs, CO 80935-6521. Permission is granted to reprint articles provided credit is given to both the author and the Ø-Beat. For membership and subscriptions see the back inside cover of this publication. Monthly advertising rates: Full page \$48; Half page \$24; Quarter page \$12; Business card \$6. Rates are billed quarterly. Send advertisements and payments to Pikes Peak Radio Amateur Association, Inc, P.O. Box 16521, Colorado Springs, CO 80935-6521.

## Club and Local News

### Jerry Allen NØGCA, SK

By now you may have heard of the passing of club member Jerry Allen NØGCA, formerly N5GVP. Jerry passed away in mid-December.

Our condolences go out to his wife of 42 years, Marilyn KA5SVI, and his five children, nine grandchildren, and four step-grand-children. Accord to Jerry's web site, Jerry has lived in Colorado Springs for the past 15 years.

### Renew Your Club Membership

by N7LV Rob Roller

Unless you've already paid through to the end of 2003, all membership dues expire in December of every year. Now is the time to drop that check in the mail, along with a membership form so we can update our data base. Please send your dues in to either the club PO box, or bring them to the next club meeting. Remember that Les Borst KCØNC is

the club's membership chair, and he can address any questions relating to membership, as well as to your Ø-Beat subscription.

### Ham Classes to Start This Month

By KBØRKW Linda Hedges, Technical Instruction Committee Chair

The date for this next class will be Tuesday, January 7th and will be held on Tuesday and Thursday evenings from 7:00 PM until 9:00 PM. This will be for a six week period winding up on Thursday, February 13th.

The location will be at the same place that they have been held for the last couple of years, which is at the Office Of Emergency Management, 305 South Union Blvd., Colorado Springs, CO, which is right across the street from the south end of Prospect Lake, in the rear part of the building on the basement level. Thanks to Jim Mesite KCØFIB for hosting these classes.

The cost for the classes is free, but a person can purchase the "Now Your Talking " book the first night of the classes for \$19.00. There will also be a special test session held the last night of the classes for the normal cost of \$12.00. This session is to all; you need not be a student).

You should have already registered for the class with Frank, Barb or Linda. However, the enrollment figures aren't available, so if you're interested, contact Frank or Barb McNally at 596-8733 or Linda Hedges at 683-7828 also at [kb0rkw@juno.com](mailto:kb0rkw@juno.com).

For current club members, if you have a chance, swing by one or two of the classes to give Frank support and help out if you can.



Jerry Allen NØGCA



## Swapfest Planning Kicked-Off!

By KCØEGJ Kate Muniz, Hamfest Chair

Just a reminder that the next planning meeting is coming up on January 11, at 9 am, at the CSPD Falcon substation, 7850 Goddard St.

We've confirmed June 14 at Lewis-Palmer High School for the hamfest. Prizes will include a Yaesu FT-817 and VX-1R provided by the PPRAA. The Cheyenne Mtn Repeater Group will also be donating a raffle prize this year: a Yaesu FT-8900R quad bander! Quite a prize! Tickets are being printed and should be available at the January club meeting. Stay tuned to the reflector and the PPRAA Simplex Net for the latest details.

## Historical Dits and Bits

By NKØP Ron Deutsch, Historian

### 20 Years Ago This Month:

- The swapfest prize money was set at \$400. The prize was to be a VIC-20 computer with the 8K RAM add-on module. 1,000 tickets were printed and sold for \$1 each.
- PPRAA held a winter swapfest at Winters Drive in Colorado Springs. Flea market spaces sold for \$12 each. Equipment for sale included a VIC 20 disc drive for \$329.

Anyone having items for historical interest to PPRAA is invited to contact Ron NKØP at [nk0p@arrl.net](mailto:nk0p@arrl.net). All items will be catalogued and added to the PPRAA archives.

If you have any information on our club activities or any information on our members prior to 1970 please contact me or any club officer. We'd like to scan your information or take your memories and put them in writing.

**We're still looking for the club history records. Last known person to have them is Roger Eslik NØVR. Anyone knowing his whereabouts please contact me.**

## Club Briefs

- The Boy Scout Freezoree will be held this year at the USAFA, 0000Z on January 25 to 1900Z on Jan 27. Contact Mike WV7T if you can assist. Mike is looking to set up stations on all HF bands, as well as have stations on VHF and UHF, and also ATV.

The PPRAA has a special event call sign WØF for use during the event.

- Thanks to Shelley Jones Penney VE1NOS for putting together a superb Christmas party!
- It's going to be a busy year for the club. Mark these on your calendar: ARRL Rocky Mountain Division convention, aka "HamCon", May 30 - June 1, Estes Park; PPRAA Hamfest, June 14.
- Future programs: Feb: Al Penney VO1NO will continue his talk on the World War II electronic warfare, entitled "Battle of the Beams". In March we'll have a program on the more traditional digital modes, like RTTY and AMTOR. Contact Rick KØSU if you have an idea for a future program.
- Breakfast anyone? I haven't been to a Saturday morning breakfast in a while, but I'm told that they are no longer at the North End Diner off of Fillmore. Can anyone clue in this editor as to where folks are meeting for breakfast these days? Are Saturday morning breakfasts a thing of the past? Just how many different groups are meeting for breakfast? I'd like to let everyone know where these things are happening. Thanks!

## Membership Report

By KCØNC Les Borst, Membership Chair

### PLEASE WELCOME THESE NEW MEMBERS

MARK NEWBY .....WL7LZ

### Total Number of Members

198

## Board Meeting Minutes, December 16, 2002

By KCØGMI Joanie VerDuft, Secretary

President Ben Cruise NØLNW called the meeting to order at 7pm. He thanked Rick KØSU for hosting the meeting. Those in attendance were Tom McDaniel NØNTX, Bob Wogaman KBØB, Rick Brown KØSU, Kate Muniz KCØEGJ, Mike Anderson WV7T



acting as proxy for N7LV, Jerry VerDuft ADØA, Joanie VerDuft KCØGMI and John Roth NØQJS, observer. Absent were Rob Roller N7LV and Aaron Pelouze KD6FLM.

The November board meeting minutes were approved. Bob reported a balance of \$3,237.18 in the club's main checking account and \$2,609.22 in savings. Kate talked about the swapfest going well and that we are 2 months ahead on planning. She noted that CMRG is providing a prize of a FT-8900 broadband transceiver. Grand prize will be a FT-817 or \$500 cash. The next swapfest committee meeting will be Jan 11<sup>th</sup> at Falcon Station, 9 am. Mike proposed the club apply for a 10-10 club and Six Meter International Radio Club (SMIRK) membership for one or both of its club calls to receive membership numbers for future operating contests. These numbers will become permanently assigned. The cost would be a one time fee of \$10 for the 10-10 number and \$6 for the SMIRK number per call. After discussion, the board agreed to authorize application for 10-10 and SMIRK membership for our new club call AFØS only. The board also agreed that WV7T would remain as the trustee for AFØS and that we reimburse him for the AFØS application fee. Tom discussed the need for some club members to attend the upcoming gaming

classes for supervising the raffle at our swapfests. The board authorized a maximum of 5 attendees as assigned by NØNTX. Bob noted payment of our PO box fee and liability insurance and that dues renewals were beginning to come in. Rick discussed the program for January will be home brew night, February will be continuation of Al Penney's talk on "Battle of the Beams", March something on digital communications. Ben stated that in January we should be prepared to select a FD site for 2003; the AF academy site has been suggested. We're also still looking for a FD Chairman. Ben also talked about the activities of the summer Scout jamboree as a great avenue to get the kids interested and set up for classes to get their licenses. The January board meeting will be held at Joanie and Jerry's QTH. The board meeting adjourned at 7:47pm. *Respectfully submitted, Joanie VerDuft, KCØGMI, Secretary*

### General Meeting Minutes

Looking for the general meeting minutes? Aha! Caught you snoozing! Since there was no meeting in December (we had the Christmas party, remember?) there are no minutes!

### Looking for New Ø-Beat Editor

It's time for me to pass the baton on to another creative individual (not that I'm creative or anything) and let someone else have some fun with producing the Ø-Beat. It is fun, and educational too! It's amazing how much you'll learn about ham radio. It's really not a big job, but it does take several hours a month to piece it together. Getting it to the printer is now a piece of cake since X-Press accepts it via e-mail. Mailing it out is accomplished by none other than our membership chairman since he has the data base with the labels, etc. So you can spare about 8-10 hours a month, and can use a word processor, let me know. (You could also go back to cutting and pasting on the old paste-up boards if you're not comfortable with word processors.)



Former PPRAA member Aki Matsuda ABØIH gets around. Now living in Japan, he travels to other countries on business, including the USA. Here is Aki at Tiananmen Square in China.

## Public Service Communications

The PPRAA is an ARRL Special Services Club, but it is not an emergency services club itself. The PPRAA supports all amateur radio involvement in public service and emergency communications in any way it can, including reporting activities happening in the region. These columns are based on available knowledge of the editor, and the opinions expressed are not necessarily the opinions of RACES, ARES, Skywarn or any other organization, or their leadership. Logos used with permission.

### RACES



<http://www.qsl.net/epcraces/>

VHF Net Tuesdays at 1930 on the 146.76 MHz

CMRG repeater

Tony Dal Lago KC4VMB, RACES Officer

Starting off the new year with some administrative business. All RACES members will need to get the new badges as El Paso county gets a new sheriff. Current badges expire this month. Also we'll have elections to some officer positions within RACES. Think about volunteering for one of these positions! Stand by for more details on an antenna work party!

### ARES



<http://www.qsl.net/ppares/>

VHF Net Tuesdays at 1900 on the 146.97 MHz

PPFMA repeater

Wes Wilson KØHBZ, EC

Things are again pretty quiet. Weather has been fair. Other than our need for moisture, the fair weather is nice. Nevertheless, we all need to be prepared for the unexpected. Hope everyone had a safe holiday!



Some photos from the NWS Skywarn Recognition Day in Pueblo last month.

Left photo: Front row, L to R: Joanie VerDuft KCØGMI, Carol Wilson KCØDTQ, Wes Wilson KØHBZ. Back row: Unidentified persons #1 and #2, Mike Stansberry KØTER, unidentified person #3. Right photo: Need some help here. Can anyone identify these two folks?

### Follow-up on the Straight Keys

By N7LV Rob Roller

After last month's article on straight keys, Jerry ADØA provided me with more information about the bugs. The Vibroplex "bugs" were popular until the fully electronic keyer came out. The "bugs" were a mechanical device in what we called a semi-automatic key in that a left hand movement would send "dits" for as long as the spring mechanism was active which was usually no more than 8 to 10 dits (depending upon the spring tension adjustment). You still made your own dahs with the

right hand movement. One of the first popular fully electronic keyers was the Hallicrafters "TO" keyer (designed by W9TO) but it was vacuum tube and is now a dinosaur (Jerry still has his TO keyer) Jerry now still uses a Vibroplex paddle similar to the pix on page 10 of Dec Ø-Beat into an MFJ-407D Deluxe Electronic Keyer (sends both dits and dahs automatically depending on a left or right paddle movement), and allows you to adjust speed, weight, and sidetone; it also has provisions for switching to the semi-automatic mode for those that still like that routine. The "Iambic" or "squeeze" keyer uses a dual-handle-paddle which has the ability to make a consecutive series of di-dah or dah-dit combinations with



a single squeeze of the two handles. This is a good keyer for high speed contesting if you master it because it requires less hand movement than the single keyer paddle. Thanks for that info, Jerry!

---

## Ham Etc News Briefs

---

- According to ARRL VEC manager Bart Jahnke W9JJ, the cost of an amateur radio license exam will rise from \$10 to \$12 beginning January 1. Tests at the end of the PPRAA ham class in Feb will cost \$12.
- There is also a new question pool for the Technician class license, which is now available for studying, and will be used beginning July 1, 2003.
- The FCC will cease collecting date of birth information. For years you'd have to put your birth date info on the ham radio license application form. No longer, even though block will remain on existing forms for a while. (Back when the DOB info was available, I was able to come up with the average age of our club members, which back then, around 1995, was 51.7 years old - or was it 53.7? I've forgotten - I'm not as young as I used to be. I'd assume it has since increased, but at a somewhat slower rate since we have some new younger members these days.)
- Last month it was reported that these internet service providers had stopped allowing e-mail from arrl.net domains to be forwarded to their subscribers. Since then the ISPs have been convinced that we're not spammers and are allowing mail to flow again. I personally don't use hotmail or juno so can't speak with any personal experience, but from what I can gather, things are working again.
- **VIGILANCE, VOLUNTARY GIVING ARE YEAR 'ROUND NECESSITIES, ARRL PRESIDENT SAYS** (*from the ARRL Letter*)

With several important issues facing Amateur Radio, ARRL President Jim Haynie, W5JBP, says now is not the time to get complacent about ham radio's future. On the World Radiocommunication Conference 2003 agenda next summer, for example, are items that could change the face of 40 meters worldwide and compel amateurs to compete with interference from mapping satellites on 70 cm and from radio local area networks on microwave bands. Domestically, ham radio faces an array of threats from unlicensed Part 15 devices and the spectrum demands of new technologies (see <http://www.arrl.org/news/bandthreat/>).

"Amateur Radio is not safe," said Haynie, who's completing his third year as the League's top--and unpaid--official. "If we relax our energies--even for a day or a week--we can lose valuable ground." Haynie has not let down his guard. He personally has devoted

months of work on the road during 2002 on Amateur Radio's behalf. That includes time in Washington talking up ham radio with those who hold its future most directly in their hands.

Preserving the future of Amateur Radio is not cheap either. "When we talk about defense of frequencies and advocacy, what we really mean is the \$1.2 million that the ARRL spent in staff costs, travel, laboratory work, legal filings and other professional assistance," he said.

ARRL membership dues cover just some of the costs associated with advocacy. So does income from investments and other revenue sources. But approximately 40 percent of the cost of the ARRL's efforts to preserve ham radio's future--the 2003 goal is \$500,000--comes from voluntary donations from within the Amateur Radio community. ARRL Chief Development Officer Mary Hobart, K1MMH, says donations have dipped below expectations even as the ARRL has been successful in raising ham radio's visibility.

Hobart blames the slack in giving in part as a result of the economic downturn, but she also believes this year's campaign may be languishing due to apathy. "The enhanced visibility we now enjoy due to the efforts of our president and other volunteers may have led many of our members to erroneously conclude that Amateur Radio has arrived," Hobart speculates. "I hope that the average ARRL member understands what it means to represent Amateur Radio in Washington." She also says some hams may think there's not much going on because progress often must be measured in inches rather than miles.

Haynie believes 2002 has seen some notable successes, however. It included the introduction of HR 4720, a measure that for the first time asked congress to lead the way in eliminating the burden of private deed covenants, conditions and restrictions--CC&Rs--as they affect the ability of amateurs to erect outdoor antenna structures. The year also saw the FCC propose--at the behest of the ARRL--two new Amateur Radio bands and a status upgrade for the 2400-2402 MHz amateur allocation.

Hobart says that as the year draws to a close, every contribution counts as the ARRL works toward meeting its \$500,000 goal. "We are hearing that some folks are really feeling the pinch of the current economic and stock market situation," she said, "but if every ARRL member would contribute \$8 a year, we could fund our advocacy efforts for 2003 in total."

"During 2003, the ARRL Board, staff and I will be working hard for you and for the future of Amateur Radio," Haynie said. "Please support us."

The ARRL is an IRS 501(c)(3) organization, and contributions to the Spectrum Defense Fund are deductible to the extent permitted by law. Visit the secure FCC Web site <<http://www.arrl.org/defense>> for more information and to make a contribution.

### Top Ten Ham New Years Resolutions for 2003

- #10: Get that 2m antenna OUTSIDE the house so I can have a solid signal into the repeaters.
- #9: Clean up that rat's nest of wires under the operating desk.
- #8: Make a few extra copies of that net script and keep one next to the rig!
- #7: Choose a power connector, and make it a common connector on all my radios and equipment.
- #6: Try a new mode of operating (e.g., ATV, 2m SSB, CW, HF mobile)
- #5: Increase my Morse code speed by 5 words per minute.
- #4: Learn to program the most common features on my radio - so I can do it WITHOUT the manual.
- #3: Upgrade!
- #2: Bring at least one new person into the ham radio hobby this year.
- and #1: Find some area where the club needs my help, and VOLUNTEER!

### dB or Not dB: That is the Question

By AAØL Ray Uberecken

[Ed: This is a reprint of an article Ray wrote for the April 1980 Ø-Beat.]

What does the letters dB stand for? Sooner or later anyone working with radios will run across the term and get confused. dB stand for "decibel", a unit to describe a **power** ratio. Notice the word "power" is in bold. This is important because the decibel is *always* a power ratio, although it may be expressed in terms of voltage or current with proper precautions.

The decibel is one-tenth of a Bel, the basic unit. However the Bel is seldom used so we will confine our discussion to the decibel. The dB as we stated is a power ratio expressed in logarithmic form. On a logarithmic scale, 0 equals 1, 10 equals 10, 20 equals 100, 30 equals 1000, and so on. Showing this relationship in table form will make it a little clearer.

Decibels	Numerical Equivalent
-60 dB =	1/1,000,000
-30 dB =	1/1,000
-20 dB =	1/100
-10 dB =	1/10
0 dB =	1
10 dB =	10
20 dB =	100
30 dB =	1000
60 dB =	1,000,000
100 dB =	10,000,000,000

When working with decibels remember what you really are working with is a power ratio. As an example, let's take an amplifier with a gain of 30 dB. The question is, how much does the amplifier increase the level? Looking at the table above, locate 30 dB. The increase in level is equivalent to the numerical value of 30 dB, or 1,000. The table can also be used for loss in dB, e.g., -30 dB. Such a case would be an attenuator. In this case the attenuator would have an output equal to 1/1000 of the input. Notice so far we have only talked about a ratio, not absolute values.

In many applications, some standard reference has been agreed upon. In audio and radio frequency work this reference is usually 1 milliwatt. In antenna work we use either an isotropic source or a dipole. Sometimes when working with relatively high power such as those encountered in transmitters, the reference will be 1 watt. To prevent confusion we add a letter to the dB to indicate the reference level:

dBm Decibel compared to 1 milliwatt

dBw Decibel compared to 1 watt

dBd Decibel compared to a dipole

dB<sub>i</sub> Decibel compared to an isotropic radiator

Let's look at another example. An antenna has a 20 dB<sub>i</sub> gain. What is the effective power gain of the antenna? Looking at the dB table, we find 20 dB equals a ratio of 100. The dB<sub>i</sub> indicates we are referencing to an isotropic radiator.

The table shows many of the commonly used ratios, but what happens if we have a 3, 9, 14, 33 or any other dB ratio?

First, there are two basic ratios that must be committed to memory:

3 dB = a power ratio of 2

10 dB = a power ratio of 10

With only these two ratios, all other whole number dB ratios can be mentally computed. The technique is



simple. Just add positive dBs, and subtract negative dBs, to get the total gain or loss in dB. Here's an example.

$$\begin{array}{r} +10 \text{ dB} \\ + 3 \text{ dB} \\ \hline +13 \text{ dB} \end{array}$$

To find the numerical power ratio of 13 dB simply multiply or divide the equivalent numerical ratios:

$$\begin{array}{r} +10 \text{ dB} = 10 \\ + 3 \text{ dB} = \times 2 \\ \hline +13 \text{ dB} = 20 \end{array}$$

Therefore, +13 dB equals a power ratio of 20. Here are a couple more examples:

What is the equivalent of 6 dB gain?

$$\begin{array}{r} + 3 \text{ dB} = 2 \\ + 3 \text{ dB} = \times 2 \\ \hline + 6 \text{ dB} = \times 4 \end{array}$$

6 dB is equivalent to a gain of 4 times.

What is the equivalent of 7 dB gain?

$$\begin{array}{r} +10 \text{ dB} = 10 \\ - 3 \text{ dB} = \times 1/2 \\ \hline + 7 \text{ dB} = \times 5 \end{array}$$

7 dB is equivalent to a gain of 5 times.

Remember, to compute the numerical power ratio of several dB ratios, add or subtract the dBs and multiply or divide the numerical values.

I said you could figure out any whole dB ratio from just the two basic ratios (3 dB=2 and 10 dB=10). The method involves addition and subtraction of two known quantities. For example, 9 dB is really 3 dB + 3 dB + 3 dB. We add dBs and multiply numerical values, so  $2 \times 2 \times 2 = 8$ . Or, 9 dB is equivalent a gain of 8.

Here are a few more examples:

What is the numerical ratio of 1 dB?

$$\begin{array}{r} +10 \text{ dB} = 10 \\ - 3 \text{ dB} = \times 1/2 \\ - 3 \text{ dB} = \times 1/2 \\ - 3 \text{ dB} = \times 1/2 \\ \hline + 1 \text{ dB} = 1.25 \end{array}$$

What is the numerical ratio of 26 dB?

$$\begin{array}{r} +10 \text{ dB} = 10 \\ +10 \text{ dB} = \times 10 \\ + 3 \text{ dB} = \times 2 \\ + 3 \text{ dB} = \times 2 \\ \hline +26 \text{ dB} = 400 \end{array}$$

26 dB is equivalent to a gain of 400 times.

What is the equivalent of -14 dB gain?

$$\begin{array}{r} -10 \text{ dB} = 1/10 \\ -10 \text{ dB} = \times 1/10 \\ + 3 \text{ dB} = \times 2 \\ + 3 \text{ dB} = \times 2 \\ \hline -14 \text{ dB} = \times 1/25 \end{array}$$

-14 dB is equivalent to a loss of 25 times.

What is the numerical ratio of -185 dBw? As you have probably noted, this will be a very small number, roughly equivalent to the sensitivity of a moonbounce receiver on 432 MHz. It represents the receiver input level as compared to 1 watt. Again, referring to the table to simplify the computation:

$$\begin{array}{r} - 60 \text{ dB} = 1/1,000,000 \\ - 60 \text{ dB} = \times 1/1,000,000 \\ - 30 \text{ dB} = \times 1/1,000 \\ - 10 \text{ dB} = \times 1/10 \\ - 10 \text{ dB} = \times 1/10 \\ - 3 \text{ dB} = \times 1/2 \\ - 3 \text{ dB} = \times 1/2 \\ - 3 \text{ dB} = \times 1/2 \\ - 3 \text{ dB} = \times 1/2 \\ - 3 \text{ dB} = \times 1/2 \\ \hline -185 \text{ dB} = \times 1/3,200,000,000,000,000,000 \end{array}$$

It's okay to use a calculator on this one - I did.

If you're mathematically inclined and can use logarithms, the formula to compute these ratios is:

$$dB = 10 \times \log_{10} \left( \frac{P_{out}}{P_{in}} \right)$$

Or if the ratio is desired as we have been computing:

$$\frac{P_{out}}{P_{in}} = \text{Anti log} \left( \frac{dB}{10} \right)$$

In conclusion, decibels are not difficult to work with. Remembering only two easy ratios, all whole number ratios can be computed mentally. By being able to convert dBs into numerical power ratios, you'll have a better feel for the expected levels of receiver sensitivities, amplifier gains, and effective radiated power of antennas.

Have a little time to kill? Find the words below in this puzzle, horizontally, vertically, or diagonally. (Then when you're done, pick a word and write a short article about it and send it to me for next month's *Ø-Beat*.)

R	A	M	W	S	D	M	E	A	S	A	G	R	R	T	G	Q	T	S	Y
A	P	Q	P	R	O	P	A	G	A	T	I	O	N	R	O	U	Y	H	R
Q	F	C	R	Q	O	H	I	C	Q	F	O	Q	S	R	C	L	M	O	O
V	Y	P	W	J	W	D	O	J	E	M	E	R	G	E	N	C	Y	Y	T
O	S	C	A	R	N	U	T	D	O	E	O	B	K	F	I	H	X	P	A
S	E	V	P	C	E	V	U	R	V	G	W	E	Z	Y	L	J	A	G	L
C	L	B	X	F	K	Z	S	O	R	G	I	C	R	B	A	L	U	N	U
I	O	E	T	L	T	E	N	A	U	E	K	Y	U	A	I	K	S	L	D
L	V	E	P	A	C	N	T	C	E	I	T	G	J	T	L	G	O	N	O
L	O	S	Q	U	E	L	C	H	L	Z	C	R	O	A	V	M	N	U	M
A	W	A	X	S	P	S	Y	R	X	A	E	O	E	D	I	P	O	L	E
T	J	I	D	M	B	B	V	R	T	P	I	R	M	V	H	K	I	K	D
O	V	T	E	L	C	R	I	C	T	A	E	R	G	T	N	P	T	W	J
R	C	C	T	C	D	O	H	V	E	F	U	Z	B	C	U	I	I	J	X
Z	O	T	Q	T	H	E	N	J	G	D	P	P	R	A	A	D	D	P	S
Q	A	R	V	E	R	T	I	C	A	L	U	Z	X	K	G	F	E	L	H
G	X	G	R	S	T	L	X	D	I	S	R	E	I	F	I	L	P	M	A
P	I	L	J	E	T	G	T	U	N	R	E	T	T	U	B	H	X	L	D
S	A	M	K	C	Y	A	E	S	U	O	W	I	W	L	A	Z	D	T	Q
X	L	X	I	N	O	T	Y	E	E	P	A	T	T	C	U	D	N	B	X

PACKET

TNC

ICOM

YAESU

KENWOOD

ALINCO

OSCAR

PROPAGATION

INVERTER

DATA

EMERGENCY

DIPOLE

VERTICAL

BUTTERNUT

AMPLIFIER

DUCTTAPE

DXPEDITION

MORSE

RTTY

ERROR

GREATCIRCLE

ALC

LOAD

OSCILLATOR

SQUELCH

COAXIAL

BALUN

GAIN

BUGCATCHER

MODULATOR

ROACH

AGC

PPRAA

GPS

## Colorado Connection News, December 12, 2002

By WBØQMR Paul Shackelford

The Christmas party last Thursday was loads of fun and good food. Thanks to all that came and we missed those that couldn't make it. Thanks to Bill (KBØNWM) and Sharon (KBØTPN) for arranging the party. I also wish to thank the board of directors for the award I was given at the party. There is not much happening with The Connection this month or last with the exception of our Leadville repeater going down and the DESPERATE NEED for TRANSPORTATION to the top of Mosquito Pass so the guys can hike up the last mile to the site and revive it. This site relays signals to and from Vail, Salida, Wolf Creek and Rifle repeaters and (its failure) has those isolated as stand-alone repeaters as things are now. If you can help with some sort of snow machine or what ever please email us at kb0vjj@colcon.org or contact John (N5EHP) at Ham Radio Outlet in Denver and let us know. There will not be a Volunteers meeting until February 11 and then none in March but the regular monthly meetings start again on April 8. We hope to see many of you at these meetings so that we may get your input on additions and changes to the system. There is not room enough in this article to list you all individually but we at The Connection would like to offer our sincere thanks to all of you who helped with donations, project help and general volunteer work. Without you we could not keep the system running. Last but not least all of us at The Connection would like to wish everyone a Happy Holiday Season and a great New Year. 73 From The Colorado Connection Board Of Directors.

# Pikes Peak Region Ham Radio Event Calendar

January / February 2003 -- Please see Page 2 for Points of Contact

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 Straight Key Nite New Years Day	2	3	4 MARC VE Test
5	6	7 PPRAA Ham Class Begins	8 PPRAA Mtg	9 PPRAA Ham Class	10 Lunch Bunch	11 HamCon Mtg Hamfest Planning Mtg
12	13 PPRAA Board Mtg	14 PPRAA Ham Class	15 MARC Mtg	16 EPCRACES Mtg PPRAA Ham Class	17	18
19	20	21 PPRAA Ham Class	22	23 PPRAA Ham Class	24	25 Freezoree
26 Freezoree	27 ZB Deadline	28 PPRAA Ham Class	29	30 PPRAA Ham Class	31	1 Hamfest Planning Mtg
2	3	4 PPRAA Ham Class	5	6 PPRAA Ham Class	7	8 PPRAA VE Test HamCon Mtg
9	10	11 PPRAA Ham Class	12 PPRAA Mtg	13 PPRAA Ham Class & VE Test	14 Lunch Bunch	15
16 ARA Swapfest	17 PPRAA Board Mtg	18	19 MARC Mtg	20 EPCRACES Mtg	21	22
23	24 ZB Deadline	25	26	27	28	

**Questions about any event on this calendar? Something missing? Try our web page, or contact a Board Member!**

## PPRAA Membership Application

Membership Application for the Pikes Peak Radio Amateur Association, Inc.	
P.O. Box 16521, Colorado Springs, CO 80935-6521	
Date: _____	<input type="checkbox"/> New Member <input type="checkbox"/> Renewal
Name: _____	In which activities would you like to participate?
Address: _____	Field Day <input type="checkbox"/>
City: _____ State: _____ Zip: _____	Demonstrations <input type="checkbox"/>
Call: _____ Class: N T + G A E    Phone: _____	Nets or round tables <input type="checkbox"/>
Mbr of ARRL? <input type="checkbox"/> Yes <input type="checkbox"/> No    E-mail: _____	Organize activities <input type="checkbox"/>
Additional Family Members to Join/Renew:	Teach ham classes <input type="checkbox"/>
Name: _____ Call: _____ Class: _____ ARRL? _____	Full Member \$15: <input type="checkbox"/>
Name: _____ Call: _____ Class: _____ ARRL? _____	Family Membership \$18: <input type="checkbox"/>
Name: _____ Call: _____ Class: _____ ARRL? _____	Over 65 \$10: <input type="checkbox"/>
	Over 65 Family \$12: <input type="checkbox"/>
	Associate \$12: <input type="checkbox"/>
	Ø-Beat Only \$12: <input type="checkbox"/>
	Donation to Club: \$ _____
	Total Enclosed: _____
<b>MAKE ALL CHECKS PAYABLE TO "PPRAA"</b>	
<b>Please indicate how you'd like your Ø-Beat delivered:</b> <input type="checkbox"/> Standard hardcopy via U.S. Mail (Defaults to standard hard copy in the event that NO check boxes are checked) <input type="checkbox"/> As a PDF file attachment via e-mail, to help save a few bucks <input type="checkbox"/> I'll save the club a few bucks and download it from the Web!	
Circle your interests ⇒ HF / V/UHF / FM / SSB / Digital / DX / Contests / Technical / Hardware / Other _____	
New and renewing members must submit a completed application form along with your check to the Treasurer.	
<b>Please Type or Print Clearly!</b>	

**ALL NEW MEMBERSHIPS AND RENEWALS WILL BE PRORATED TO EXPIRE IN DECEMBER!!**



# RadioActivities!



## Lunch Bunch

The **Lunch Bunch** this month is January 10, and it's at the Country Buffet, Citadel Crossing Mall, from 1130 to 1300 (That's where it was in

November - it's should be the same place this month.) Join us! (Always the **Friday** following the club meeting.) Call Moe WBØRTF with any questions!!

## Hamfest Horizon & More

- **Feb 16, 2003:** Aurora Repeater Assn, Brighton. Contact Wayne Heinen NØPOH 303-699-6335, [n0poh@arrl.net](mailto:n0poh@arrl.net). [www.qsl.net/n0ara/](http://www.qsl.net/n0ara/)
- **May 30 – Jun 1, 2003:** Rocky Mountain Division Convention (HamCon), Estes Park. Visit the web site at <http://www.hamconcolorado.org> Contact Jerry VerDuft ADØA, 719-634-8066, [ad0a@arrl.net](mailto:ad0a@arrl.net).
- **Jun 14, 2003:** PPRAA Hamfest, Lewis-Palmer High School, Monument. VE testing, forums, raffle prizes! Contact Kate Muniz KCØEGJ for details.

## Dits and Bits

- **For Sale:** Do you have items for sale, wanted, etc? Be sure to send them in to the editor!

**Jess Miley**

**KØTAA**

**719 W 7th, Florence, CO, 81226  
719-784-3040**

Amateur & Hobby Radio Products, We Trade  
30 day money back guarantee on used equipment.  
Excellent Tech @ \$35 per hour,  
Commercial rates higher  
Please call before you drive!

### **Specials!**

Ameritron AL1200 Amplifier, near new, 3CX-  
1200A7, loads to 2500 W DC to DL  
New: \$2,295 - Now \$1,450  
Will not ship -- Too heavy!

**Pikes Peak Radio Amateur Association, Inc.**  
**P.O. Box 16521**  
**Colorado Springs, CO 80935-6521 USA**

**First Class Mail**

**To:**